

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An anaerobic digester for installation on an upwardly open containment vessel containing a body of organic waste material slurry comprising:

a first cover made of gas permeable material conducive to bacterial colonization for installation on the surface of a body of organic waste material slurry in a containment vessel;

at least one gas conveying duct installed on the top of the first cover when the first cover is installed on the surface of a body of organic waste material;

a second cover made of gas impermeable material installed over the first cover and over the gas conveying duct forming a gas collection space with the first cover;

the first and second covers having edges that are closed together in order to inhibit the escape of gas from between them;

said duct having a plurality of ports for passage of gas from the gas collection space into the duct;

blower means connected to the duct to move gas out of the duct to a remote location for storage or use.

2 The anaerobic digester of claim 1 including:

a plurality of interconnected gas collection ducts spaced apart on the surface of the first cover and connected to the blower means.

3. The anaerobic digester of claim 1 including:

a plurality of interconnected gas collection ducts arranged in parallel relationship on the surface of the first cover.

4. The anaerobic digester of claim 3 including:
a main manifold connected to the ducts and to the blower means.
5. The anaerobic digester of claim 3 wherein:
the edges of the first and second covers are closed together by placing the edges together in a trench bounding the containment vessel and filling the trench with a fill material.
6. The anaerobic digester of claim 3 including:
flotation blocks supporting the gas conveying ducts on the surface of the first cover.
7. The anaerobic digester of claim 6 including:
flotation panels connected to the first cover.
8. The anaerobic digester of claim 7 wherein:
said first cover is made from a geotextile material.
9. The anaerobic digester of claim 8 wherein:
said first cover includes a first layer and a second layer with said flotation panels disposed between the first and second layers.
10. The anaerobic digester of claim 3 wherein:
said first cover floats.
11. The anaerobic digester of claim 10 including:
flotation blocks supporting the gas conveying ducts on the surface of the first cover.
12. The anaerobic digester of claim 10 wherein:

said first cover includes a first layer and a second layer, and including flotation panels disposed between the first and second layers.

13. An anaerobic digester system for recovery of a usable grade of methane gas from organic waste material slurry, comprising:

an upwardly open containment vessel for containment of organic waste material slurry;

a first cover made of gas permeable material conducive to bacterial colonization for installation on the surface of a body of organic waste material slurry in the containment vessel;

a gas collection system installed on the top of the first cover when the first cover is installed on the surface of a body of organic waste material;

a second cover made of gas impermeable material installed over the first cover and over the gas collection system forming a gas collection space with the first cover;

the first and second covers having edges that are closed together in order to inhibit the escape of gas from between them;

blower means connected to the gas collection system to move gas out of gas collection space to a remote location for storage or use.

14. The anaerobic digester system of claim 13 wherein:

said gas collection system includes a plurality of interconnected gas collection ducts spaced apart on the surface of the first cover and connected to the blower means.

15. The anaerobic digester system of claim 13 wherein:

said gas collection system includes a plurality of interconnected gas collection ducts arranged in parallel relationship on the surface of the first cover.

16. The anaerobic digester system of claim 15 including:
a main manifold connected to the ducts and to the blower means.
17. The anaerobic digester system of claim 15 wherein:
the edges of the first and second covers are closed together by placing the edges together in a trench bounding the containment vessel and filling the trench with a fill material.
18. The anaerobic digester system of claim 15 including:
flotation blocks supporting the gas conveying ducts on the surface of the first cover.
19. The anaerobic digester system of claim 18 including:
flotation panels connected to the first cover.
20. The anaerobic digester system of claim 18 wherein:
said first cover is made from a geotextile material.
21. The anaerobic digester system of claim 20 wherein:
said first cover includes a first layer and a second layer with said flotation panels disposed between the first and second layers.
22. The anaerobic digester system of claim 15 wherein:
said first cover floats.
23. The anaerobic digester system of claim 22 including:
flotation blocks supporting the gas conveying ducts on the surface of the first cover.
24. The anaerobic digester system of claim 22 wherein:

said first cover includes a first layer and a second layer, and including flotation panels disposed between the first and second layers.

25. A method of recovering a usable grade of methane gas from a body of organic waste material in slurry form, comprising:

covering the surface of the slurry with an anaerobic digester having a first cover made of a gas permeable material conducive to bacterial colonization, a second cover of gas impermeable material having edges closed to the edges of the first cover forming a gas collection space between the first and second covers, a gas collection duct with gas passage apertures located in the gas collection space so that gas from the slurry permeates the first cover and enters the space between the first and second covers; and

drawing off through the duct the gas collected in the gas collection space between the first and second covers.

26. The method of claim 25 including:

using a blower to draw the gas through the duct.

27. A method of recovering a usable grade of methane gas from a body of organic waste material in slurry form, comprising:

covering the surface of the slurry with a first cover of gas permeable material conducive to bacterial colonization;

installing a gas collection duct having a plurality of gas collection apertures on the first cover;

installing a second cover of gas impermeable material over the first cover and the gas collection duct with edges of the second cover closed to edges of the first cover to form a gas collection space between the first and second covers;

drawing off through the gas collection duct gas which enters the gas collection space from the slurry through the first cover.

28. The method of claim 27 including:

using a blower to draw the gas from the gas collection duct.